Remarks

Claims 1-4, 8, 10, 11, 15-20, 22, 23, and 27 are pending in the Application. Claims 15 and 27 are amended above merely to correct obvious errors in dependency. Applicants herein comply with requirements set forth in 37 CFR §41.202(a)(2)-(a)(6).

I. 37 CFR §41.202(a)(2) Identification of Interfering Claims, Proposed Count, and Claim Correspondence.

A. Interfering Claims 37 CFR §41.203(a) provides as follows:

> An interference exists if the subject matter of a claim of one party would, if prior art, have anticipated or rendered obvious the subject matter of a claim of the opposing party and vice versa.

Claim 2 of the subject Application (the '298 Application) is indicated to be allowable at page 2 of the May 12, 2005 Office Communication. Claim 2 of the '298 Application, if prior art, would have anticipated or rendered obvious the subject matter of claim 10 of U.S. Patent No. 6,528,700 B1 (the '700 Patent), and vice versa. Accordingly, Applicants respectfully submit that an interference exists between claim 2 of the '298 Application and claim 10 of the '700 Patent. In addition, Applicants believe that claim 2 interferes at least with claims 6, 7, 22, 23, and 26 of the '700 Patent.

To Applicants' knowledge, no paper has been issued by the Patent Office indicating the allowable/rejected status of any of the other claims pending in the '298 Application. Applicants accordingly respectfully request further clarification on this issue. However, because claim 2 has been indicated as allowable, Applicants believe that at least claims 3 and 4, which depend from claim 2, must also be allowed. Accordingly, Applicants believe that claims 3 and 4 of the '298 Application each also interferes with at least claims 6, 7, 10, 22, 23, and 26 of the '700 Patent. With no further indication of the allowable/rejected status of the remaining claims of the '298 Application, Applicants are unable designate which other of their allowable claims are interfering with the claims of the '700 Patent. Further clarification in this regard is respectfully requested.

B. Proposed Count

For the purpose of the suggested interference, Applicants propose a single Count ("the Count") as follows:

> A method of making a localized mutation in a plant cell to an ALS gene causing the plant cell to be herbicide resistant comprising the steps of:
> (a) adhering to a particle a recombinagenic oligonucleobase, which contains a first homologous region which has a sequence identical to the sequence of at least 6 base pairs of a first fragment of the ALS gene and a second homologous region which has a sequence identical to the sequence of at least 6 base pairs of a second fragment of the ALS gene, and an intervening region which contains at least 1 nucleobase heterologous to the ALS gene, which intervening region connects the first homologous region and the second homologous region, wherein the recombinagenic oligonucleobase is a mixed duplex oligonucleotide (MDON) and each of the homologous regions contains an RNA segment of at least 6 RNA-type nucleotides;
> (b) introducing the particle into a cell of a population of plant cells;
> (c) identifying a cell of the population of plant cells having a mutation located between the first and second fragments of the ALS gene.

The proposed Count corresponds to claim 2 of the '298 Application (noted in the May 12, 2005 Office Communication to be the Count), as it would appear if rewritten in independent form.

C. Correspondence of Claims to the Count

Under the provisions of 37 CFR §41.207(b)(2), a claim corresponds to a Count if the subject matter of the Count, treated as prior art to the claim, would have anticipated or rendered obvious the subject matter of the claim.

The claims of the parties that are believed to correspond to the Count are as follows:

Applicants:	Claims 1-4, 8, 10, 11, 15-20, 22, 23, and 27
The '700 Patent:	Claims 1-32

None of the claims of the parties are believed to not correspond to the Count.

1. Designation of Applicants' Claims 1-4, 8, 10, 11, 15-20, 22, 23, and 27

Applicants identify claims 1-4, 8, 10, 11, 15-20, 22, 23, and 27 of the '298 Application as corresponding to the Count. Applicants provide below an explanation in narrative

form for why all of the claims of the '298 Application should be designated as corresponding to the Count. As stated in 37 CFR §41.207(b)(2):

> A claim corresponds to a Count if the subject matter of the Count, treated as prior art to the claim, would have anticipated or rendered obvious the subject matter of the claim.

a. Claim 1 of the '298 Application

Claim 1 recites every element of the Count except the added limitation that is found in claim 2 of the '298 Application. Accordingly, claim 1 would be anticipated by the Count. Therefore, claim 1 should be designated as corresponding to the Count.

b. Claim 2 of the '298 Application

Claim 2 depends from claim 1, and forms the basis of the Count. It is identical to the Count when rewritten in independent form. Accordingly, claim 2 would be anticipated by the Count. Therefore, claim 2 should designated as corresponding to the Count.

c. Claim 3 of the '298 Application

Claim 3 depends from claim 2, but further specifies that the intervening region between the first and second homologous regions is at least 3 nucleotides in length. The general structure of MDONs is taught in the prior art, for example U.S. Patent No. 5,565,350 to Kmiec (Kmiec I). Kmeic I teaches MDONs having first and second homologous segments of at least 8 RNA-like nucleotides that are separated by a third segment of from 4 to about 50 DNA-like nucleotides. The subject matter of claim 3 of the '298 Application would be rendered obvious by a combination of the Count and Kmeic I. Accordingly, claim 3 should be designated as corresponding to the Count.

d. Claim 4 of the '298 Application

Claim 4 depends from claim 2 and adds the further element of "culturing the identified cell so that a plant is generated." Regenerating plants from transformed plant cells had been known in the art for more than a decade prior to the filing of the '298 Application. Accordingly, assuming the Count to be prior art to claim 4, the added limitation of regenerating a transformed cell into a plant might render it novel, but not non-obvious. Therefore, claim 4 should be designated as corresponding to the Count.

e. Claim 8 of the '298 Application

Claim 8 depends from claim 2, but further limits the claim by defining the specific conditions under which the adhering step is performed:

"...the adhering step is performed in a solution comprising 1.1-1.4M NaCl and 18-22μM spermidine and at least 14 μg/ml mixed duplex oligonucleotide (MDON)."

It was unpredictable that small oligonucleotides such as the MDONs used in the subject invention could be successfully adhered to a microparticle such that they could be effectively blasted through a plant cell wall and deliver the oligonucleotides successfully to the interior of the cell. Thus, the step of adhering MDONs to microparticles and using them to cause desired mutations in plant genomes was novel and non-obvious over prior art generally concerning the use of biolistics for plant transformation. However, because one must for purposes of this inquiry assume the Count to be prior art to claim 8, it is assumed that methods for adhering MDONs to microparticles and then using those microparticles for plant cell transformation is old in the art. Under such an assumption, the specific adherence conditions would be merely optimizing the protocol, and thus routine experimentation for one skilled in the art. Therefore, claim 8 should be designated as corresponding to the Count.

f. Claim 10 of the '298 Application

Claim 10 depends from claim 1, adding the further limitation that the plant cell targeted for transformation is a "maize, wheat, rice, or lettuce cell." Because transformation protocols for these types of plants were known in the art before the priority date of the '298 Application, they do not render the claim non-obvious over the Count. Accordingly, claim 10 should be designated as corresponding to the Count.

g. Claim 11 of the '298 Application

Claim 11 depends from claim 1, adding the further limitation of specifying the target plant cell to be one of "potato, tomato, canola, soybean or cotton cell." Because methods for transformation of each of these types of plant were known in the art before the priority date of the '298 Application, they do not render the claim non-obvious over the Count. Accordingly, claim 11 should be designated as corresponding to the Count.

h. Claim 15 of the '298 Application

Claim 15 depends from claim 2 (which is identical to the Count), adding the further step of "making seeds from the plant or the progeny of the plant." Applicants note that it appears this claim should actually be dependent from claim 4, and have attempted to amend the claim accordingly hereinabove. In the prior art it was well known to obtain seeds from plants that had been regenerated from transgenic cells. Accordingly, this additional element is not sufficient to render the claim non-obvious over the Count. Therefore, claim 15 should be designated as corresponding to the Count.

i. Claim 16 of '298 Application

Claim 16 recites a method of making a localized mutation in an ALS gene comprising the step of "perforating the cell walls of a population of cells" and introducing into those cells a recombinagenic oligonucleobase having the same characteristics as those disclosed in the Count. The Count specifies adhering an MDON to a particle and introducing the particle into a plant cell. Although the Count does not specify that the cells to be transformed comprise cell walls (and all mature plant cells do); if they comprise cell walls, then the walls would necessarily be perforated in the transformation process, thereby inherently anticipating the "perforating" step of claim 16. Alternatively, the state of plant transformation art was such that it was expected that MDONs could be introduced into plant cells by plant transformation techniques known at the time except for by the process of biolistic transformation. Because the Count provides for biolistic transformation, and for purposes of this inquiry it is assumed to be in the prior art, once it was shown that MDONs could successfully used to transform plant cells through biolistics, it would have been obvious to the skilled artisan that MDONs could be used by any other known transformation method where a cell wall is perforated to transform plant cells. Therefore, claim 16 is either anticipated by or rendered obvious by the Count and should be designated as corresponding to the Count.

j. Claim 17 of the '298 Application

Claim 17 further limits claim 16 by specifying that the recombinagenic oligonucleobase is an MDON, a limitation which is specified in the Count, and thus does not render claim 17 non-

obvious over the Count. Accordingly, claim 17 should be designated as corresponding to the Count.

k. Claim 18 of the '298 Application

Claim 18 depends from claim 17 and adds the further step of "culturing the identified cell so that plant is generated." Techniques for regenerating plants from transformed cells were well known in the art before the priority date of the '298 Application. Accordingly, adding a step of culturing a transgenic cell until it is regenerated into a plant will not render the claim non-obvious over the Count. Therefore, claim 18 should be designated as corresponding to the Count.

l. 19 of the '298 Application

Claim 19 depends from claim 17 and adds the further limitation that the intervening region of the MDON comprises a mismatched nucleotide when compared to the sequence of the ALS gene, and the mutation of the ALS gene occurs adjacent to the mismatched nucleotide. This is merely describing in further detail a result that is inherent in a certain percentage of transformation events. As such, if the Count is assumed to prior art to claim 19, claim 19 would be inherently anticipated by the Count. Therefore, claim 19 should be designated as corresponding to the Count.

m. Claim 20 of the '298 Application

Claim 20 depends from claim 17 and adds the further limitation that the mutator segment of the MDON when compared to the sequence of the target ALS gene has a mismatched nucleotide, and the mutation of the ALS gene is located at the position of mismatched nucleotide. As with claim 19 discussed above, this further limitation merely describes a result that is inherent in a certain percentage of transformants. Accordingly, if the Count is assumed to prior art to claim 20, it inherently anticipates claim 20. Therefore, claim 20 should be designated as corresponding to the Count.

n. Claim 22 of the '298 Application

Claim 22 depends from claim 16, adding the further limitation that the target plant cell is "a maize, wheat, rice or lettuce cell." Transformation protocols for each of these plant species were known in the art before the priority date of the '298 Application. Accordingly, merely adding a limitation to the type of plant cell to be transformed does not render the claim non-obvious over the Count. Therefore, claim 22 should be designated as corresponding to the Count.

o. Claim 23 of the '298 Application

Claim 23 depends from claim 16, but further limits the claim by specifying the type of target plant cell to be one of "a potato, tomato, canonla, soybean or cotton cell." Transformation techniques for each of these plant species were known in the art before the priority date of the '298 Application. Accordingly, further specifying the type of plant cell to be transformed does not render the claim non-obvious over the Count. Therefore, claim 20 should be designated as corresponding to the Count.

p. Claim 27 of the '298 Application

Claim 27 depends from claim 16, but adds the further step of "making seeds from the plant or from progeny of the plant." Applicants note that this claim should depend from claim 18, and have attempted to amend this claim accordingly hereinabove. The step of obtaining seeds from a plant regenerated from a transgenic cell was well known in the art before the priority date of the '298 Application. Accordingly, adding this additional step does not render the claim non-obvious over the Count. Therefore, claim 27 should be designated as corresponding to the Count.

2. Designation of Claims 1-32 of the'700 Patent

Applicants identify claims 1-32 of the '700 Patent as corresponding to the Count. Applicants provide below an explanation in narrative form for why all of the claims of the '700 Patent should be designated as corresponding to the Count. As stated in 37 CFR §41.207(b)(2):

> A claim corresponds to a Count if the subject matter of the Count, treated as prior art to the claim, would have anticipated or rendered obvious the subject matter of the claim.

a. Claim 1 of the '700 Patent

Claim 1 of the '700 Patent is directed to "a method of introducing a predetermined alteration in a target sequence of a genome of a plant cell," which is a broader description encompassing the method specified in the Count. The claimed method comprises introducing a chimeric oligonucleotide into the plant cell, and describes a chimeric oligonucleotide in terms which render it broader than, and completely encompassing, the recombinagenic oligonucleobase described in step (a) of the Count. The recombinagenic oligonucleobase is introduced into the plant cell by step (b) of the Count. Accordingly, the first step of claim 1 of the '700 Patent, introducing a chimeric oligonucleotide into the plant cell, is anticipated by steps (a) and (b) of the Count. The final step specified in claim 1 of the '700 Patent is "maintaining the chimeric oligonucleotide within the plant cell whereby the alteration is introduced into the target genomic sequence." This is inherently accomplished by step (c) of the Count which specifies "identifying a cell of the population of plant cells having a mutation located between the first and second fragments of the ALS gene [the target genomic sequence]." Because the Count has anticipated both steps specified in the method of claim 1 of the '700 Patent, claim 1 should be designated as corresponding to the Count.

b. Claim 2 of the '700 Patent

Claim 2 describes the same method of claim 1, but adds a further limitation to the chimeric oligonucleotide that "said oligonucleotide comprises at least one region of contiguous unpaired bases disposed so that said region of contiguous unpaired bases separates the oligonucleotide into a first and second strand." This further limitation does not serve to render claim 2 unpatentable over the Count. The Count specifies that the recombinagenic oligonucleobase is a mixed duplex oligonucleotide (MDON). MDONs are taught in the prior art, for example, in Kmiec I (incorporated into the '298 Application) which discloses MDONs having 2 strands, in which a first strand contains 2 segments of at least 8 RNA-like nucleotides that are separated by a third segment of from 4 to about 50 DNA-like nucleotides...the nucleotides of the first strand are base paired to DNA-like nucleotides of a second strand.

Kmiec I further teaches the first and second strands are additionally linked by a segment of single-stranded nucleotides so that the first and second strands are parts of a single oligonucleotide chain. This "segment of single-stranded nucleotides" is the same as the "region of contiguous unpaired bases" specified in claim 2 of the '700 Patent. Accordingly, the Count anticipates claim 2. Therefore, claim 2 should be designated as corresponding to the Count.

c. Claim 3 of the '700 Patent

Claim 3 depends from claim 2, and further limits the claim by specifying the types of RNA residues to be used. MDONs taught in the prior art by Kmiec I and by U.S. Patent NO. 5,731,181 (Kmiec II) teach the use of such RNA-type residues. Accordingly, claim 3 is not novel or non-obvious over the Count, and therefore should be designated as corresponding to the Count.

d. Claim 4 of the '700 Patent

Claim 4 depends from claim 2, and further limits the claim by specifying that the first and second blocks of RNA residues comprise at least 5 contiguous nucleotides. The Count specifies that MDON have first and second RNA regions of at least 6 base pairs each. Accordingly, the Count anticipates claim 4. Therefore, claim 4 should be designated as corresponding to the Count.

e. Claim 5 of the '700 Patent

Claim 5 depends from claim 3, and further limits the claim by specifying that the DNA block comprises at least 5 contiguous nucleotides. The Count specifies the use of MDONs. MDONs are taught prior art, by, for example, Kmiec I and Kmiec II, as containing a segment of "from 4 to about 50 DNA-like nucleotides," which anticipates or renders obvious the further limitation specified in claim 5 that the DNA block "comprises at least 5 contiguous nucleotides." Therefore, claim 5 should be designated as corresponding to the Count.

f. Claim 6 of the '700 Patent

Claim 6 depends from claim 5, and further limits the claim by specifying that the plant nucleotide sequence encodes "a herbicide resistance gene." The Count specifies that the target plant sequence is the ALS gene, which can confer resistance to sulfonylurea. Accordingly, the

Count anticipates claim 6. Therefore, claim 6 should be designated as corresponding to the Count.

g. Claim 7 of the '700 Patent

Claim 7 depends from claim 6, and further specifies that the herbicide resistance gene confers resistance to sulfonylurea. The ALS gene specified by the Count when mutated confers resistance to sulfonylurea. Accordingly, claim 7 is anticipated by the Count and should be designated as corresponding to the Count.

h. Claim 8 of the '700 Patent

Claim 8 depends from claim 6, and further limits the claim by specifying that the herbicide resistance gene "confers resistance to imidazolinone." Mutations to the ALS gene specified as the target plant gene by the Count were taught in the prior art to produce resistance to imidazolinone. See for example, U.S. Patent Nos. 5,013,659 and 5,378,824 (Bedbrook). Bedbrook teaches specific mutations that make plants resistant to both sulfonylurea and imidazolinone herbicides. Accordingly, claim 8 is either anticipated or rendered obvious by the Count. Therefore, claim 8 should be designated as corresponding to the Count.

i. Claim 9 of the '700 Patent

Claim 9 depends from claim 6, and further specifies that the herbicide resistance gene is the EPSP synthase gene. The Count renders this claim obvious. The EPSP synthase gene was well known in the art before the priority date of the '700 Patent to be linked to herbicide resistance. The pathways and mechanisms of herbicide resistance in plants were well known in the art before the priority date of the '700 Patent. It was well known that point mutations in well known target genes would confer herbicide resistance to the plant cells. Accordingly, once it was shown that MDONs could be used for targeted mutations to yield one type of herbicide resistance, it was obvious to those skilled in the art to use MDONs to introduce well known mutations in well known genes to predictably yield herbicide resistance. Accordingly, if the Count is assumed to be prior art to claim 9, claim 9 is rendered obvious by the Count. Therefore, claim 9 should be designated as corresponding to the Count.

j. Claim 10 of the '700 Patent

Claim 10 depends from claim 6, and specifies that the herbicide resistance gene is the AHAS gene. The AHAS gene is also known as the ALS gene. The Count specifies that the target gene is the ALS gene. Therefore, claim 10 is anticipated by the Count and should be designated as corresponding to the Count.

k. Claim 11 of the '700 Patent

Claim 11 depends from claim 2, and further specifies that the DNA block comprises at least one mismatch to the target sequence. The Count specifies an MDON with an intervening region containing "at least 1 nucleobase heterologous to the ALS gene," the ALS gene being the target sequence. The 1 heterologous nucleobase is the mismatch. Accordingly, the Count anticipates or renders obvious claim 11. Therefore, claim 11 should be designated as corresponding to the Count.

l. Claim 12 of the '700 Patent

Claim 12 depends from claim 2, and further specifies that the plant cell is a dicot cell. Because transformation protocols for dicots were known in the art well before the priority date of the '700 Patent, specifying that the plant cell is a dicot cell does not render the claim non-obvious over the Count. Therefore, claim 12 should be designated as corresponding to the Count.

m. Claim 13 of the '700 Patent

Claim 13 depends from claim 2, and further specifies that the plant cell is a monocot cell. Because transformation protocols for monocots were known in the art well before the priority date of the '700 Patent, specifying that the plant cell is a monocot cell does not render the claim non-obvious over the Count. Therefore, claim 13 should be designated as corresponding to the Count.

n. Claim 14 of the '700 Patent

Claim 14 depends from claim 13, and further specifies that the monocot is maize. Because transformation protocols for maize were known in the art well before the priority date of the '700 Patent, specifying that the monocot is maize does not render the claim non-obvious over the Count. Therefore, claim 14 should be designated as corresponding to the Count.

o. Claim 15 of the '700 Patent

Claim 15 depends from claim 2, and further specifies that the chimeric oligonucleotide comprises certain sequences. Although the specific sequences are not explicitly taught by the Count, the types of mutations desired in the target sequence were well known in the art, and unless these specific sequences are shown to be surprisingly better than other sequences used in MDONs in causing mutations to yield herbicide resistance, though they may be novel, they are obvious variants. Claim 15 is obvious over the Count, and should be designated as corresponding to the Count.

p. Claim 16 of the '700 Patent

Claim 16 depends from claim 2 and further specifies certain sequences for the chimeric oligonucleotide. For the same reasons described above in claim 15, specific sequences, in the absence of showing surprising effectiveness, are obvious over the Count. Accordingly, claim 16 should be designated as corresponding to the Count.

q. Claim 17 of the '700 Patent

Claim 17 is basically the same as claim 1 of the '700 Patent, but specifies "plant" instead of "plant cell." The Count is directed to plant cells. However, methods of regenerating plants from transgenic plant cells were well known in the art by the time of the priority date of the '700 Patent. Accordingly, the Count renders obvious transgenic plants. Since specifying that the method of claim 17 is directed to a plant does not render the claim non-obvious over the Count claim 17 should be designated as corresponding to the Count.

r. Claim 18 of the '700 Patent

Claim 18 depends from claim 17, and further specifies that the oligonucleotide comprises "at least one region of contiguous unpaired bases..." which is the same limitation that was added into claim 2 of '700 Patent discussed above. Kmiec I is prior art teaching this characteristic of MDONs. For the same reasons that this limitation did not render claim 2 novel or non-obvious over the Count, it fails to render claim 18 non-obvious over the Count. Therefore, claim 18 should be designated to corresponding to the Count.

s. Claim 19 of the '700 Patent

Claim 19 depends from claim 18, and further specifies the type of RNA residues used in the chimeric oligonucleotide. This is the same limitation that was added in claim 3 of the '700

Patent discussed above. Kmiec I and Kmiec II both teach these types of RNA residues can be used in MDONs. For the same reasons that this limitation did not render claim 3 non-obvious over the Count, it fails to do so with claim 19. Accordingly, claim 19 is obvious over the Count. Therefore, claim 19 should be designated to corresponding to the Count.

t. Claim 20 of the '700 Patent

Claim 20 depends from claim 18, and further specifies that the first and second blocks of RNA residues comprise at least 5 contiguous nucleotides. This is the same limitation which was introduced into claim 4 of the '700 Patent discussed above. For the same reasons that it failed to render claim 4 non-obvious over the Count, it fails to render claim 20 non-obvious. The Count describes the MDON having RNA regions of at least 6 contiguous nucleotides, which anticipates this limitation. Accordingly, claim 20 is obvious over the Count and should be designated as corresponding to the Count.

u. Claim 21 of the '700 Patent

Claim 21 depends from claim 19, and further specifies that the DNA block comprises at least 5 contiguous nucleotides. This is the same limitation which was introduced into claim 5 of the '700 Patent discussed above. For the same reasons that it failed to render claim 5 non-obvious over the Count, it fails to render claim 21 non-obvious. Kmeic I and Kmeic II both teach such DNA blocks be used in MDONs. Accordingly, claim 21 is obvious over the Count and should be designated as corresponding to the count.

v. Claim 22 of the '700 Patent

Claim 22 depends from claim 21, and further specifies that the plant nucleotide sequence is a nucleotide sequence that encodes a herbicide resistance gene. This is the same limitation that was introduced in claim 6 of the '700 Patent discussed above. The ALS gene of the Count is an herbicide resistance gene. Accordingly, for the same reasons set forth above that the limitation fails to render claim 6 novel and non-obvious over the Count, it also fails to render claim 22 non-obvious over the Count. Therefore, claim 22 should be designated as corresponding to the Count.

w. Claim 23 of the '700 Patent

Claim 23 depends from claim 22, and adds the further limitation that the herbicide resistance gene confers resistance to sulfonylurea. This is the same limitation that was added in

claim 7 of the '700 Patent discussed above, and for the same reasons that the limitation was insufficient to render claim 7 non-obvious over the Count, it is also insufficient to render claim 23 non-obvious over the Count. Therefore, claim 23 should be designated as corresponding to the Count.

x. Claim 24 of the '700 Patent

Claim 24 depends from claim 22, and adds the further limitation that the herbicide resistance gene confers resistance to imidazolinone. This is the same limitation that was added in claim 8 of the '700 Patent discussed above. For the same reasons that it was insufficient to render claim 8 non-obvious over the Count, it is also insufficient to render claim 24 non-obvious over the Count. Therefore, claim 24 should be designated as corresponding to the Count.

y. Claim 25 of the '700 Patent

Claim 25 depends from claim 22, and specifies that the herbicide resistance gene is the EPSP synthase gene. This is the same limitation that was set forth in claim 9 of the '700 Patent discussed above. For the same reasons that it did not render claim 9 non-obvious over the Count, it is insufficient to render claim 25 non-obvious over the Count. Therefore, claim 25 should be designated as corresponding to the Count.

z. Claim 26 of the '700 Patent

Claim 26 depends from claim 22, and further specifies that the herbicide resistance gene is the AHAS gene. This is the same limitation that was added in claim 10 of the '700 Patent discussed above. The AHAS gene is the same as the ALS gene specified in the Count. For the reasons set forth above explaining why claim 10 is anticipated and non-obvious over the Count, claim 26 is also non-obvious over the Count. Therefore, claim 26 should be designated as corresponding to the Count.

aa. Claim 27 of the '700 Patent

Claim 27 depends from claim 18, and further specifies that the DNA block comprises at least one nucleotide mismatched to the target sequence. This is the same limitation that was added in claim 11 of the '700 Patent, discussed above. For the same reasons that it failed to render claim 11 novel and non-obvious over the Count, it is insufficient to render claim 27 non-obvious over the Count. Therefore, claim 27 should be designated as corresponding to the Count.

bb. Claim 28 of the '700 Patent

Claim 28 depends from claim 18, and further specifies that the target plant is a dicot. This is the same limitation added in claim 12 of the '700 Patent discussed above. Transformation protocols for dicots were well known in the art at least a dozen years before the priority date of the '700 Patent. For the same reasons that this limitation was insufficient to render claim 12 novel and non-obvious over the Count, it is insufficient to render claim 28 non-obvious over the Count. Therefore, claim 28 should be designated as corresponding to the Count.

cc. Claim 29 of the '700 Patent

Claim 29 depends from claim 18, and further specifies that the target plant is a monocot. This is the same limitation introduced in claim 13 of the '700 Patent discussed above. Transformation protocols for monocots were well known in the art for years before the priority date of the '700 Patent. For the same reasons that this limitation failed to render claim 12 novel and non-obvious over the Count, it is insufficient to render claim 29 non-obvious over the Count. Therefore, claim 29 should be designated as corresponding to the Count.

dd. Claim 30 of the '700 Patent

Claim 30 depends from claim 29, and further specifies that the monocot is maize. This limitation is the same as that introduced in claim 14 of the '700 Patent discussed above. Transformation protocols for maize were known in the art well before the priority date of the '700 Patent. For the same reasons that this limitation failed to render claim 14 novel and non-obvious over the Count, it is insufficient to render claim 30 non-obvious over the Count. Therefore, claim 30 should be designated as corresponding to the Count.

ee. Claim 31 of the '700 Patent

Claim 31 depends from claim 18, and further limits the chimeric oligonucleotide to one comprising a specified sequence. This is the same limitation that was added to claim 15 of the '700 Patent discussed above. For the same reasons that it failed to render claim 15 non-obvious over the Count, it also fails to render claim 31 non-obvious over the Count. Therefore, claim 31 should be designated as corresponding to the Count.

ff. Claim 32 of the '700 Patent

Claim 32 depends from claim 18, and further limits the chimeric oligonucleotide to one comprising a specific sequence. The limitation of claim 32 is identical to that introduced in claim 16 of the '700 Patent discussed above. For the same reasons that it failed to render claim 16 non-obvious over the Count, it also fails to render claim 32 non-obvious over the Count. Therefore, claim 32 should be designated as corresponding to the Count.

In view of the foregoing, Applicants have identified the claim (claim 2) which on the record has been indicated as allowable and those claims of the '700 Patent with which it interferes; Applicants have proposed a Count; and Applicants have shown how all claims pending in the '298 Application and claims 1-32 of the '700 Patent correspond with the Count. Accordingly, the requirements of 37 CFR §41.202(a)(2) are satisfied by the foregoing.

II. 37 CFR §41.202(a)(3) - Interfering Claim Chart

37 CFR §41.202(a)(3) provides that for each Count Applicants must provide a claim chart comparing at least one claim of each party corresponding to the Count and show why the claims interfere within the meaning of §41.203(a). Applicants provide below a chart comparing claim 2 of their '298 Application with claim 10 of the '700 Patent. Because each of these claims is presented in dependent form, for purposes of the following chart all claims from which they depend are included:

Claim 2 of the '298 Application	Claim 10 of the '700 Patent
2. The method of claim 1, wherein the recombinagenic oligonucleobase is a mixed duplex oligonucleotide (MDON) and each of the homologous regions contains an RNA segment of at least 6 RNA-type nucleotides.	10. The method of claim 6, wherein said herbicide resistance gene is acetohydroxy acid synthetase (AHAS) gene. 2. A method of introducing a predetermined alteration in a target sequence of the genome of a plant cell, said method comprising:

1. A method of making a localized mutation in a plant cell to an ALS gene causing the plant cell to be herbicide resistant comprising the steps of: (a) adhering to a particle a recombinagenic oligonucleobase, which contains a first homologous region which has a sequence identical to the sequence of at least 6 base pairs of a first fragment of the ALS gene and a second homologous region which has a sequence identical to the sequence of at least 6 base pairs of a second fragment of the ALS gene, and an intervening region which contains at least 1 nucleobase heterologous to the ALS gene, which intervening region connects the first homologous region and the second homologous region; (b) introducing the particle into a cell of a population of plant cells; (c) identifying a cell of the population of plant cells having a mutation located between the first and second fragments of the ALS gene.	introducing a chimeric oligonucleotide into the plant cell, said oligonucleotide having at least a first block of RNA residues and a second block of RNA residues, wherein said first and said second blocks of RNA residues are homologous to a plant nucleotide sequence and flank a block of DNA residues (DNA block), said oligonucleotide is capable of folding to form a duplex oligonucleotide; and, wherein said oligonucleotide comprises at least one region of contiguous unpaired bases disposed so that said region of contiguous unpaired bases separates the oligonucleotide into a first and second strand; and, maintaining the chimeric oligonucleotide within the plant cell whereby the alteration is introduced into the target genomic sequence. 3. The method of claim 2, wherein said first and said second blocks of RNA residues are comprised of a 2'-O or 2'-OMe ribose. 5. The method of claim 3, wherein said DNA block comprises at least 5 contiguous nucleotides. 6. The method of claim 5, wherein said plant nucleotide sequence is a nucleotide sequence that encodes a herbicide resistance gene.

Section §41.203(a) defines interfering subject matter by stating "An interference exists if the subject matter of a claim of one party would, if prior art, have anticipated or rendered obvious the subject matter of a claim of the opposing party and vise versa."

Claim 2 of '298 application has been set forth on the left-hand column of the chart above. If rewritten as an independent claim, it is the proposed Count. Assuming it to be prior art to

claim 10 of the '700 Patent, which is written in the right hand side of the chart above, one notes the following: Claim 2 is directed to "a method of making a localized mutation in a plant cell to an ALS gene causing the plant cell to be herbicide resistant." Claim 10 is directed to "A method of introducing a predetermined alteration in a target sequence of the genome of a plant cell" [from claim 2], the target sequence necessarily being a plant nucleotide sequence, "wherein said plant nucleotide sequence is a nucleotide sequence that encodes a herbicide resistance gene" [from claim 6], "wherein said herbicide resistance gene is [the AHAS] gene." [from claim 10]. The AHAS gene of claim 10 of the '700 Patent is the same as the ALS gene of claim 2 of '298 Application. Accordingly, if claim 2 of the '298 Application is assumed to be prior art over claim 10 of the '700 Patent, it has so far been shown to anticipate the basic method: introducing a localized mutation in an ALS gene to confer herbicide resistance (claim 2) is the same as introducing a predetermined alteration in the AHAS gene to confer herbicide resistance (claim 10).

In Claim 2 of the '298 Application, this method is accomplished by introducing a mixed duplex oligonucleotide (MDON) that has been adhered to a microparticle into a plant cell. Similarly, claim 10 (by way of claim 2 of the '700 Patent) introduces a chimeric oligonucleotide "capable of folding to form a duplex oligonucleotide; and, wherein said oligonucleotide comprises at least one region of contiguous unpaired bases disposed so that said region of contiguous unpaired bases separates the oligonucleotide into a first and second strand..." This is the definition of MDONs as taught in the art by Kmeic I and Kmeic II, and the '298 Application. Accordingly, both claims share this element and would anticipate or render each other obvious.

Claim 2 of the '298 Application specifies that the MDON "contains a first homologous region which has a sequence identical to the sequence of at least 6 base pairs of a first fragment of the ALS gene and a second homologous region which has a sequence identical to the sequence of at least 6 pairs of a second fragment of the ALS gene, and an intervening region which contains at least one nucleobase heterologous to the ALS gene (see claim 1 from which claim 2 depends, step (a)). By the definition of an MDON, the intervening region containing at least one nucleobase heterologous to the ALS gene is a DNA region. Comparing this with the chimeric oligonucleotide of claim 10 of the '700 Patent, one sees the chimeric oligonucleotide has at least a first block of RNA residues and a second block of RNA residues wherein said first and second

blocks of RNA residues are homologous to a plant nucleotide sequence [the AHAS gene, by virtue of claim 10] and flank a block of DNA residues...." (claim 2, from which claim 10 ultimately depends). Claim 3 of the '700 Patent further defines these first and second blocks of RNA residues as comprised of a 2'-O or 2'-OMe ribose," which is specifically taught in the prior art of Kmeic I and Kmeic II as a type of RNA to be used in making MDONs. Claim 5 of the '700 Patent further specifies that the DNA block "comprises at least 5 contiguous nucleotides." The MDONs of claim 2 of the '298 Application similarly are taught to have intervening DNA regions of from 4 to 50 nucleotides" as taught by Kmeic I and Kmeic II, which were incorporated in their entirety into the '298 Application. Accordingly, it can be seen that the characteristics of the "MDONs" of claim 2 of the '298 Application and the "chimeric oligonucleotides" of claim 10 of the '700 Patent have identical characteristics and would anticipate each other if prior art one to another.

Both claims require introducing the MDON into a plant cell: claim 2 of the '298 Application (by way of claim 1, step (b)): by way of a particle to which the MDONs are adhered; and claim 10 of the '700 Patent (by way of claim 2) wherein the method of introducing the chimeric oligonucleotide into the plant cell is not specified, but the examples of the '700 Patent show it is by way of particle bombardment (the same as the '298 Application). Accordingly, this aspect of each claim either anticipates or renders obvious the other.

Finally, step (c) of claim 2 of the '298 Application (by way of claim 1) requires "identifying a cell...having a mutation located between the first and second fragments of the ALS gene." Similarly, claim 10 of the '700 Patent (by way of claim 2) requires "maintaining the chimeric oligonucleotide within the plant cell whereby the alteration is introduced into the target genomic sequence." This "maintaining" step inherently occurs in the method of claim 2 of the '298 Application because one could not identify the cell having a mutation in the ALS gene without first having maintained the MDON within the cell for a sufficient time to cause the mutation. On the other hand, the step of identifying the cell having a mutation in the ALS gene (specified in claim 2 of the '298 Application) is obvious once one has gone through the transformation protocol with the intent of introducing just such a mutation. Thus the final elements of each of the claims has been shown to anticipate or render obvious the other.

In view of the foregoing, Applicants respectfully submit that they have shown how, for purposes of the proposed Count, at least one claim of each party corresponding to the Count has been identified (claim 2 of the '298 Application for Applicants, and claim 10 of the '700 Patent for Patentees), and how each of these claims interferes with the other. Accordingly, the requirements of Section §41.202(a)(3) have been satisfied.

III. 37 CFR §41.202(a)(4) - Why Applicants Will Prevail On Priority

37 CFR §41.202(a)(4) provides that Applicants must explain in detail why they will prevail in priority. For purposes of this interference, the filing date of the '298 Application is August 5, 1998. However, Applicants should also be accorded the benefit of U.S. Provisional Application Serial No. 60/054,836 the benefit of which has been claimed by Applicants, and which was filed **August 5, 1997**. In comparison, for purposes of the presently suggested interference, the filing date of the '700 Patent is November 17, 1998. The Application leading to the '700 Patent claimed the benefit of U.S. Application Serial No. 60/098,235, filed August 28, 1998; and U.S. Application Serial No. 60/065,628, filed November 18, 1997. Accordingly, the earliest priority date to which any claim of the '700 Patent is entitled is **November 18, 1997**. Because Applicants priority date of August 5, 1997 is more than three months earlier than the November 18, 1997 earliest possible priority date for claims of '700 Patent, Applicants are *prima fascia* entitled to priority. Accordingly, the Interference should be declared with Applicants being designated the senior party, and Baszczynski *et al.* being designated the junior party.

Applicants' Contingent Case for Priority

Although Applicants believe that the foregoing is a completely sufficient explanation of why they are *prima facie* likelihood of prevailing on priority, and thus being designated Senior Party to the interference, Applicants submit herewith as Appendix A and explanation and proofs showing an actual reduction to practice within the scope of the count that is far earlier than the earliest priority date to which either of the '298 Application or the '700 Patent is entitled. Because this response will be part of the official record of the '298 Application, and thus available to opposing parties once an interference is declared, Applicants do not want to be unfairly prejudiced by having unnecessarily disclosed a date of actual reduction to practice.

Appendix A contains a cover sheet briefly explaining the reduction to practice and listing the supporting declarations, which in turn are accompanied by supporting documentation. Applicants hereby request that if the Examiner agrees that Applicants have shown they are likely to prevail on priority that the Appendix A be returned to Applicants and not become a part of the '298 Application history.

IV. 37 CFR §41.202(a)(5)

37 CFR §41.202(a)(5) provides that "if a claim has been added or amended to provoke an interference provide a claim chart for written description for each claim in the Applicants specification..." Because Applicants did not amend any of their claims or add new claims for the purpose of provoking an interference, there is no further showing required by this section.

V. 37 CFR §41.202(a)(6)-Benefit of Earlier Filed Applications

37 CFR §41.202(a)(6) provides that for each constructive reduction to practice for which the Applicants wish to be accorded benefit, they provide a chart showing where the disclosure provides a constructive reduction to practice. Constructive reductions to practice are provided in each of the '298 Application and in the provisional application through which the '298 Application claims benefit, Application No. 60/054,836.

Claim 2 of the '298 Application	**'298 Application Disclosure**
2. The method of claim 1, wherein the recombinagenic oligonucleobase is a mixed duplex oligonucleotide (MDON) and each of the homologous regions contains an RNA segment of at least 6 RNA-type nucleotides. 1. A method of making a localized mutation in a plant cell to an ALS gene causing the plant cell to be herbicide resistant comprising the steps of: (a) adhering to a particle a recombinagenic oligonucleobase, which contains a first homologous region which has a sequence identical to the sequence of at least 6	MDONs are explicitly taught as old in the art, for example, at section 2.1 spanning pages 1 and 2 of the application. Further disclosure of MDONs is provided in section 4.1 spanning pages 4-7 of the application. Support for the "at least 6 RNA-type nucleotides" is found explicitly at page 6 of the '836 Application, to which a claim for benefit has been made. Further, the sequences of actual MDONs are provided in, for example, ALS-1 and ALS-2 described at page 22 of the '298 Application and Figure 1 of the '836 Provisional Application. The ALS-1 and ALS-2 MDONs

base pairs of a first fragment of the ALS gene and a second homologous region which has a sequence identical to the sequence of at least 6 base pairs of a second fragment of the ALS gene, and an intervening region which contains at least 1 nucleobase heterologous to the ALS gene, which intervening region connects the first homologous region and the second homologous region;	have all limitations specified in step (a) of claim 1. They are adhered to a microparticle as taught at section 4.3 spanning pages 8 and 9 of the '298 Application; and page 21 of the '298 application. Adherence techniques are taught in section 4.3 the paragraphs spanning pages 8 and 9 of the '836 Application, and at page 20 of the '836 Provisional Application.
(b) introducing the particle into a cell of a population of plant cells;	"Introducing a particle into a cell of a population of plant cells" is taught at, for example, pages 21 and 22 of the '298 Application, disclosing biolistic delivery of MDON coated gold particles. Teachings regarding biolistic delivery of MDON coated gold particles can be found spanning pages 20-21 of the '836 Provisional Application.
(c) identifying a cell of the population of plant cells having a mutation located between the first and second fragments of the ALS gene.	The final step of "identifying a cell of the population of plant cells having a mutation located between the first and second fragments of the ALS gene" is taught at page 22 of the '298 Application, lines 3 and 4 "Resistant colonies emerged after 7 to 14 days." Further details are provided throughout the next paragraph concluding with "a total of 3 ALS-1 and 5 ALS-2 transmutants having these mutations were identified." Similar results are also taught in the paragraph spanning pages 20 and 21 of the '836 Provisional Application which states "Resistant colonies emerged after 7-14 days. ALS-1 and ALS-2 have single base mismatches with the ALS gene and are complimentary to the coding strand. Following PCR amplification and sequencing of the gene of the ALS-1 and ALS-2 transmutated, resistant cell lines,....A total of 3 ALS-1 and 2 ALS-2 mutants having these mutations were identified."

Claim 2 of the '298 Application	60/054,836 Application Disclosure
2. The method of claim 1, wherein the recombinagenic oligonucleobase is a mixed duplex oligonucleotide (MDON) and each of the homologous regions contains an RNA segment of at least 6 RNA-type nucleotides.	MDONs are explicitly taught as old in the art, for example, at section 2.1 spanning pages 1 and 2 of the application. Further disclosure of MDONs is provided in section 4.1 spanning pages 4-7 of the application. Support for the "at least 6 RNA-type nucleotides" is found explicitly at page 6 of the '836 Application.
1. A method of making a localized mutation in a plant cell to an ALS gene causing the plant cell to be herbicide resistant comprising the steps of: (a) adhering to a particle a recombinagenic oligonucleobase, which contains a first homologous region which has a sequence identical to the sequence of at least 6 base pairs of a first fragment of the ALS gene and a second homologous region which has a sequence identical to the sequence of at least 6 base pairs of a second fragment of the ALS gene, and an intervening region which contains at least 1 nucleobase heterologous to the ALS gene, which intervening region connects the first homologous region and the second homologous region;	Further, the sequences of actual MDONs are provided in, for example, ALS-1 and ALS-2 described at Figure 1 of the '836 Provisional Application. The ALS-1 and ALS-2 MDONs have all limitations specified in step (a) of claim 1. They are adhered to a microparticle as taught at section 4.3 spanning pages 8 and 9 of the '836 Application; and page 20 of the '836 application.
(b) introducing the particle into a cell of a population of plant cells;	"Introducing a particle into a cell of a population of plant cells" is taught by describing biolistic delivery of MDON coated gold particles which can be found spanning pages 20-21 of the '836 Provisional Application.
(c) identifying a cell of the population of plant cells having a mutation located between the first and second fragments of the ALS gene.	The final step of "identifying a cell of the population of plant cells having a mutation located between the first and second fragments of the ALS gene" is taught in the paragraph spanning pages 20 and 21 of the '836 Provisional Application which states "Resistant colonies emerged after 7-14 days. ALS-1 and ALS-2 have single base mismatches with the ALS gene and are complimentary to the coding strand.

	Following PCR amplification and sequencing of the gene of the ALS-1 and ALS-2 transmutated, resistant cell lines,....A total of 3 ALS-1 and 2 ALS-2 mutants having these mutations were identified."

It will be noted that the particular constructive reductions to practice shown in the above charts are selected only for the purpose of demonstrating that each of the Applicants' applications to which they claim benefit show a constructive reduction to practice of a species within the scope of the Count. Applicants reserve the right to demonstrate and prove constructive reductions to practice via further disclosures during the course of the interference, after it is declared.

CONCLUSION

In view of all the foregoing, Applicants respectfully assert that they have fulfilled the requirements of 37 CFR 40.202(a)(2) through (a)(6). Accordingly, Applicants respectfully request the Examiner to advance this case to the Board of Patent Appeals and Interferences for the Declaration of an Interference between Applicants' '298 Application and the '700 Patent.

Respectfully submitted,

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JL/amh
Attachments: Petition and Fee for Extension of Time; Petition Under CFR 1.182; Appendix A